

NASA Space Mission Activity

Time:

3-4 hours

Content Standards:

- Science as Inquiry
 - abilities necessary to do scientific inquiry
- Earth and Space Science
 - earth in the solar system
- Science and Technology
 - understandings about science and technology

Objective:

Using the Internet, students will work in pairs to discover the number of space missions that NASA currently has operating and how many missions involve a Sun/Earth connection. Students will input data into an electronic worksheet such as Excel to provide a visual graph of their findings. In addition each student will choose one NASA mission that involves a Sun/Earth connection and explore it in more detail.

Equipment, Materials and Tools:

For the teacher:

Materials to reproduce

- Space Mission Activity Worksheet
2 copies per student
- Space Mission Activity Worksheet
Instructions - 1 per student

For the students:

- Notebook paper, pencils/pens
- At least 1 computer for every 2 students
- Access to the Internet
- Access to Microsoft Excel or other spreadsheet program
- Printer (for students to print out graphs/spreadsheets)

Prerequisite Skills:

- Working in groups
- Internet Navigation
- Experience working with Microsoft Excel or other electronic spreadsheet programs
 - On-line tutorials for Microsoft Excel include:
 - <http://www.compumart.ab.ca/alummis/excel/exceltutorial.html>
 - <http://www.bcschools.net/staff/ExcelHelp.htm>
 - <http://www.baycongroup.com/el0.htm>
 - <http://www.fgcu.edu/support/office2000/excel/>
- Sorting and ordering data
- Knowledge of Sun-earth terminology

Visit <http://spacescience.nasa.gov/missions/index.htm> prior to teaching this lesson to familiarize yourself with the different missions that NASA is currently operating. Also visit http://sec.gsfc.nasa.gov/sec_missions.htm to familiarize yourself with the specific missions that involve Sun-Earth connections.



NASA Space Missions

1. Give each student a copy of the *Space Mission Activity* worksheet and *Space Mission Activity* instructions. Students will form pairs to work on this assignment. Allow students time to read instructions and ask any questions about the assignment.
2. Direct students to <http://spacescience.nasa.gov/missions/index.htm> to begin the activity. Give students time to record data on the worksheet before directing them to create an Excel worksheet.
3. After the groups have completed the Internet search and have developed an Excel graph, discuss the findings in a large group setting.
4. Questions that you can ask students:
 - Were there any findings in regards to the missions that surprised you?
 - What new information regarding the missions proved interesting to you?
 - What types of missions do you want to learn more about?
5. See Figure 1 for the Data Worksheet and Figure 2 for a sample Graph of Space Missions.



Assessment:

1. Students will work individually on this assignment. Direct students to <http://spacescience.nasa.gov/missions/index.htm>. Students will choose to work with data involving missions under study, in development, or past missions.
2. Give each student a copy of the *Space Mission Activity* worksheet (Figure 1). Using the data of their choice, students will develop an Excel graph with this information.
3. Students will find one Sun-Earth connection mission and answer the following questions about the mission. Write these questions on the chalkboard:
 - What is the name of the mission?
 - What is the purpose/goal/objective of the mission?
 - What is the current status of the mission?
 - What organization is in charge of the mission?
 - What did you like about this particular mission?

Assessment Criteria

1. The worksheet has all relevant missions listed, each type of mission is stated, and each mission's objective is stated.
2. The graph is labeled correctly and each mission is represented accurately.
3. The students have answered the questions correctly and completely.

Figure 1: Space Mission Activity Worksheet

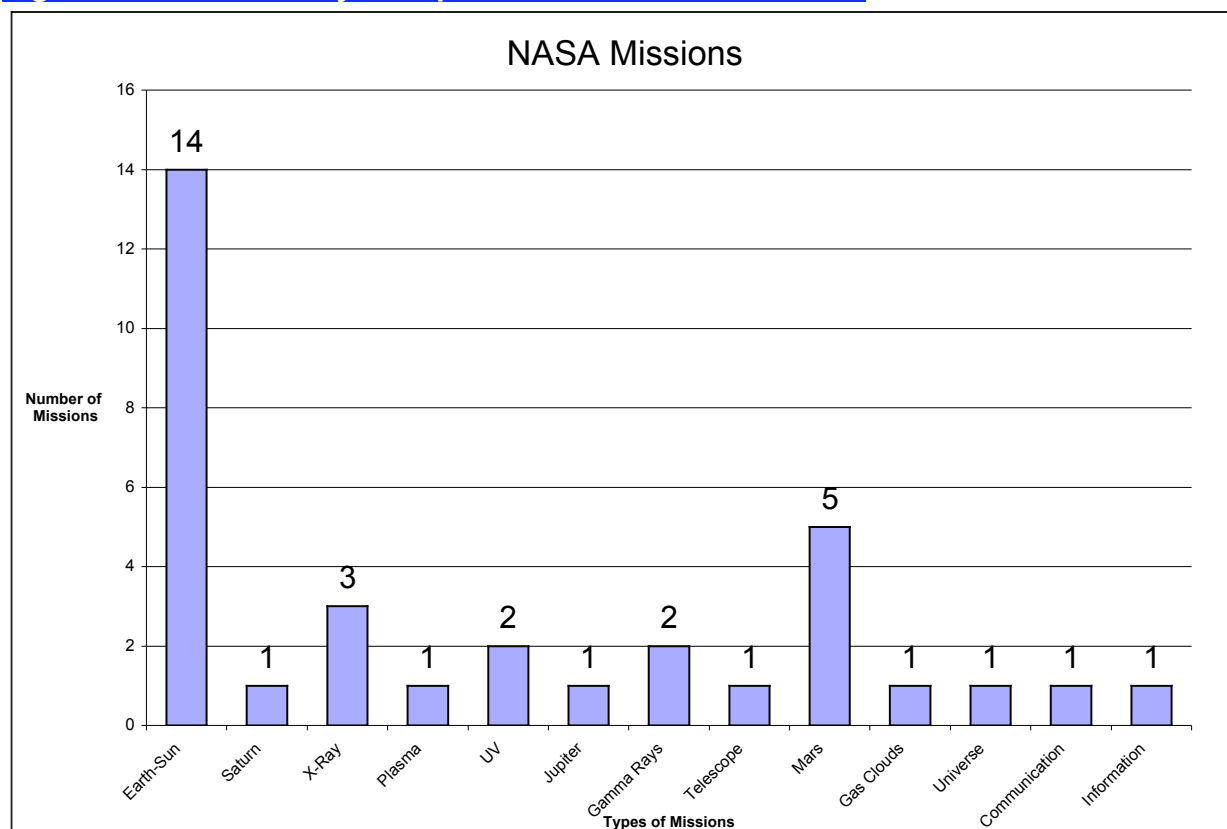
Name: _____ Period: _____ Date: _____

Name of Mission	Type of Mission	Mission Objective

On a separate sheet of paper, write a paragraph that describes the current status of a particular mission identified above.

- Has the mission completed its objectives?
- Are there any problems that the mission has encountered?
- What is your overall impression of the mission?

Figure 2: Teachers Key– Graph & List of NASA Missions



ACE – Earth-Sun	Global – Mars	Number of and Types of missions
Cassini – Saturn	Odyssey – Mars	
Chandra – X-ray	Nozomi – Mars	Earth-Sun – 14
CHIPS – Plasma	Polar – Earth-Sun	Saturn – 1
Fast – Earth-Sun	Rhessi – Earth-Sun	X-ray – 3
Cluster – Earth-Sun	RXTE – X-ray	Plasma – 1
Fuse – Ultra-violet	SOHO – Earth-Sun	Ultraviolet – 2
Galex – Ultra-violet	Stardust – Comets	Jupiter - 1
Galileo – Jupiter	SWAS – Gas clouds	Gamma ray – 2
Genesis – Earth-Sun	TIMED – Earth-Sun	Telescope – 1
Geotail – Earth-Sun	TRACE – Earth-Sun	Mars – 5
HETE-2 – Gamma rays	Ulysses – Earth-Sun	Gas clouds – 1
Hubble – Telescope	Voyager – Universe	Universe – 1
IMAGE – Earth-Sun	Wind – Earth-Sun	Communications – 1
Integral – Gamma rays	Xmm-Newton – X-ray	Information - 1
Rovers – Mars	Deep Space - Communication	
Express – Mars	Space Station - Information	